Innocent Exclusion in an Alternative Semantics

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1. The McCawley-Simons Problem. Unembedded disjunctions usually convey mutually exclusive alternatives: Mom can naturally infer from (1b) that Sandy is reading (exactly) one book.

(1) a. Mom: "What is Sandy reading?"
b. Dad: "*Moby Dick, Huckleberry Finn*, or *Treasure Island* — I don't know which."

The exclusive component of disjunctions with two disjuncts, like (2a), is derivable as a quantity implicature by assuming that a cooperative speaker that utters (2ai) takes (2aii), obtained by replacing *or* with *and*, to be false. For disjunctions with more than two disjuncts, like (1b), the situation is different: the assumption that (2bi) is true and some (or all) of the claims in (2bii) (which are determined by replacing *or* with *and*) are false does not convey that Sandy is reading exactly one of the books (McCawley 1981, Simons 1998): we rather need to assume that all the propositions in (2ciii) are false.

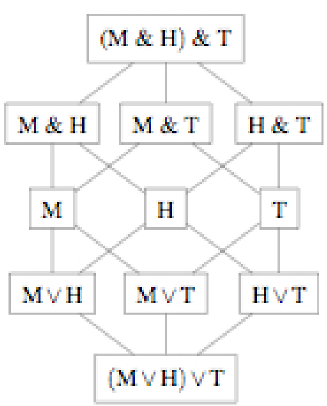
(2) a. (i) (Sandy is reading *Moby Dick* or she reading *Huckleberry Finn* $\rightsquigarrow$) $M \vee H$, (ii) $M \wedge H$
b. (i) $M \vee H \vee T$ (ii) $\{M \wedge T \wedge H, (M \vee T) \wedge H, (M \wedge T) \vee H\}$ (iii) $\{M \wedge T, M \wedge H, H \wedge T\}$

2. The Sauerland algorithm. The propositions in (3ciii) can be generated by conjoining all the atomic disjuncts of (2bi) pairwise. To do that, the pragmatic component needs to be able to retrieve from a disjunction all its atomic disjuncts. Sauerland (2004) presents a syntactic algorithm that allows the pragmatic component to have access to the atomic disjuncts. The algorithm assumes that *or* is part of a scale with *and* and two unpronounced operators ($\mathbb{L}$ and $\mathbb{R}$), and that, therefore, (2a) contrasts not only with (2aii), but also with the hypothetical sentences in (3), which are semantically equivalent to the left and right disjuncts of (2ai).

(3) S. is reading *MD* $\mathbb{L}$ she is reading *HF* ($\rightsquigarrow$ M); S. is reading *MD* $\mathbb{R}$ she is reading *HF* ($\rightsquigarrow$ H)

The cross-product of two *or* scales ($\{\text{or}, \mathbb{L}, \mathbb{R}, \text{and}\} \times \{\text{or}, \mathbb{L}, \mathbb{R}, \text{and}\}$) determines the claims that compete with a disjunction with two *or*s. For (2bi), the operation yields a set containing sixteen ordered pairs, each of which determines a competing sentence. Some of these sentences are logically equivalent: the mechanism generates thirteen distinct meanings, eleven of which are in (4).

(4)



Fox (2006) solves the McCawley-Simons problem by assuming that the propositions taken to be false are those in every set of propositions containing as many negated Sauerland competitors as consistency permits (those competing claims that are "innocently excludable") —in this case the propositions in the first and second row in (4).

3. Innocent Exclusion in an Alternative Semantics. The Sauerland-Fox strengthening procedure solves the McCawley-Simons problem by trying to make all the atomic disjuncts visible in the semantics. Because it assumes the standard boolean semantics for *or*, however, the procedure still allows for the exclusion of some atomic disjuncts. Under the standard analysis of disjunction, the sentences in (5) and (1b) are logically equivalent.

The sentences in (5) and (1b) are therefore indistinguishable to the algorithm, and should both convey an exclusive meaning: the Sauerland algorithm generates sixty-four competitors for (5), but only four distinct meanings, which correspond to the meanings of the competitors for (1b) $(\mathrm{M} \vee \mathrm{H}, \mathrm{M}, \mathrm{H}, \mathrm{M} \wedge \mathrm{H})$.

(5) Sandy is reading *Moby Dick*, *Huckleberry Finn*, or both. ($\rightsquigarrow \mathrm{M} \vee \mathrm{H} \vee (\mathrm{M}\ \&\ \mathrm{H})$)

A number of recent works on the semantics of *or* (Aloni 2003, Simons 2005, Alonso-Ovalle 2006) advocate the hypothesis that disjunctions introduce sets of propositional alternatives into the semantic derivation. Adopting an Alternative Semantics for *or* allows for an extension of the mechanics of innocent exclusion that (i) does not rely on the Sauerland algorithm (making the $\mathbb{L}$ and $\mathbb{R}$ operators superfluous), and (ii) avoids the exclusive strengthening of (5). If disjunctions denote sets of propositional alternatives, we can make the required competing propositions available by closing the set of propositional alternatives under conjunction:

(6) For any sentence *S*,
$[\![\mathrm{S}]\!]_{\mathrm{ALT}_\cap} = \{p \mid \exists \mathscr{B}[\mathscr{B} \in \wp([\![S]\!])\ \&\ \mathscr{B} \neq \emptyset\ \&\ p = \bigcap \mathscr{B}]\}$

The problem that the Sauerland-Fox algorithm runs into is then easy to avoid. In an Alternative Semantics, the disjunctions in (1b) and (5) denote different types of semantic objects. The disjunction in (1b) denotes the set of propositional alternatives in (7i) and the disjunction in (5) the one in (7ii). The set of competitors generated by the function $[\![\cdot]\!]_{\mathrm{ALT},\cap}$ is the same for both disjunctions (7iii), but because the disjunctions denote different sets of propositions, the set of innocently excludable competitors is different. Take the disjunction in (1b). There are two ways of adding to each member of its denotation as many negated competitors as consistency allows (8). The proposition that Sandy is not reading both *Moby Dick* and *Huckleberry Finn* is in each of them, and, so, it is innocently excludable.

(7) (i) $\{\mathrm{M}, \mathrm{H}\}$ (ii) $\{\mathrm{M}, \mathrm{H}, \mathrm{M} \wedge \mathrm{H}\}$ (iii) $[\![(7\mathrm{i})]\!]_{\mathrm{ALT},\cap} = [\![(7\mathrm{ii})]\!]_{\mathrm{ALT},\cap} = \{\mathrm{M}, \mathrm{H}, \mathrm{M}\ \&\ \mathrm{H}\}$

(8) (i) $\{\mathrm{M}, \neg\mathrm{H}, \neg(\mathrm{M}\ \&\ \mathrm{H})\}$, (ii) $\{\mathrm{H}, \neg\mathrm{M}, \neg(\mathrm{M}\ \&\ \mathrm{H})\}$

Consider now the disjunction in (5). Because the disjunction denotes a set containing three propositions, we need to consider three ways of adding as many negated competitors as consistency allows. They are represented by the sets in (9). The proposition that Sandy is not reading both *Moby Dick* and *Huckleberry Finn* does not follow from every set in (9), and, therefore, is not innocently excludable.

(9) (i) $\{\mathrm{M}, \neg\mathrm{H}, \neg(\mathrm{M}\ \&\ \mathrm{H})\}$ (ii) $\{\mathrm{H}, \neg\mathrm{M}, \neg(\mathrm{M}\ \&\ \mathrm{H})\}$ (iii) $\{\mathrm{M}\ \&\ \mathrm{H}\}$

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